



Defence Research and
Development Canada

Recherche et développement
pour la défense Canada



DRDC Toronto Technical Stream Integrated Capabilities and Vision

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Defence R&D Canada
Technical Memorandum
DRDC Toronto TM 2011-017
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Canada

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Abstract

With the success of Defence Research & Development Canada – Toronto's Organizational Alignment Program and Professional Partnership Philosophy, the Technical Stream (TS) was presented with the challenge of providing a foundation for its success through the identification of their unique, integrated capabilities and the impact that they have towards achieving the organizational mission. A secondary objective was to develop a TS vision statement that would be instituted within the Technical Council Charter. A project team of eight TS members, representing military and civilians from all sections, and a wide range of occupational groups and experience, developed a notional set of integrated capabilities and vision statements. These were presented to all Technical Professionals through a “town-hall” meeting and published on Corpranet for review. Based on the feedback received, four current and four developing integrated capabilities and the TS Vision Statement were identified, and presented at the 2010 All Staff Briefing and subsequent Management Committee Meeting. Based on positive reception and acceptance, a multi-phase notional roadmap was proposed to provide a strategy for future TS development. This roadmap is based on the themes of: a) upholding the Technical Profession, b) developing the Technical Professional, c) fostering a culture of collaboration and networks, and d) expanding the Technical Professional's influence. Through the identification of the TS integrated capabilities and vision statement, and the way forward provided by the notional roadmap, the TS is poised to achieve greater excellence and impact towards the DRDC Toronto mission.

Résumé

Comme suite au succès du Programme d'harmonisation organisationnelle et de la Philosophie du partenariat professionnel de Recherche et développement pour la défense Canada – Toronto, le Réseau technique (RT) a reçu le mandat d'expliquer le fondement de sa réussite en précisant ses capacités uniques et intégrées de même que son impact sur la réalisation de la mission de l'organisation. Un deuxième objectif consistait à élaborer un énoncé de la vision du RT qui pourrait être intégré à la Charte du Conseil technique. Une équipe de projet, composée de huit membres du RT, représentant les militaires et les civils de toutes les sections ainsi qu'une vaste gamme de groupes professionnels et d'expériences, a élaboré un ensemble théorique de capacités intégrées et d'énoncés de la vision, lequel a été présenté à tous les professionnels techniques dans le cadre d'une séance de discussion ouverte et publié sur Corpranet à des fins d'examen. Grâce aux commentaires reçus, on a pu identifier quatre capacités existantes et quatre capacités intégrées en développement ainsi que l'énoncé de la vision du RT, et les présenter à la séance d'information 2010 destinée à tout le personnel, puis à la réunion du Comité de gestion. Reposant sur une approbation et un accueil positifs, une feuille de route théorique à étapes multiples a été proposée en fonction d'une stratégie destinée à d'éventuels développements du RT. Cette feuille de route repose sur les thèmes suivants : a) maintien de la profession technique, b) perfectionnement de la profession technique, c) adoption d'une culture de collaboration et de réseautage, d) élargissement de l'influence de la profession technique. Grâce à l'identification de l'énoncé de la vision et des capacités intégrées du RT ainsi qu'à la voie à suivre de la feuille de

route théorique, le RT est voué à l'excellence tout en ayant un impact hautement positif sur la mission de RDDC Toronto.

Executive summary

DRDC Toronto Technical Stream Integrated Capabilities and Vision:

Sgt Rick Auger; Lt(N) Troy Beechinor; Hamid Boland; Brenda Fraser; Allan Keefe; Nada Pavlovic; Doug Saunders; Phil Terhaar; DRDC Toronto TM 2011-017; Defence R&D Canada – Toronto; September 2011.

Introduction or background: With the implementation of Defence Research & Development Canada – Toronto’s Organizational Alignment Program (OAP) and Professional Partnership Philosophy (PPP), Technical Professionals (TPs) have an unprecedented opportunity for career development and assuming new and innovative leadership activities. While the Professional Partnership, and associated framework documents, provides a clear, contextual definition of the identity, roles and expertise of the Technical Stream (TS), they do not provide the necessary strategic impetus to guide the TS towards achieving organizational impact. To achieve this end, DRDC Toronto Director General, Dr. Ross Pigeau, presented a challenge to the TS to identify its integrated capabilities and the impact that these contributions have towards achieving the DRDC Toronto mission. A second objective was to identify a TS Vision Statement that would be instituted within the Technical Council Charter. These project deliverables were to be presented to the May 2010 All Staff Briefing and Management Committee Meeting.

Results: A team of eight TS members, representing civilians and military from all sections, and a wide range of occupational groups and experience, was assembled to undertake this initiative. In consultation with all TS members through a “town-hall” meeting and a detailed communication plan, a set of notional integrated capabilities were refined into eight integrated capabilities consisting of four existing capabilities:

- *Multidisciplinary expertise across human and technical domains;*
- *Expertise in Science & Technology (S&T) tools and infrastructure;*
- *Leveraging capability through networks and self-organization; and*
- *Project oriented capabilities.*

Additionally, four emerging capabilities were identified:

- *Military/Civilian integration or partnership;*
- *Technology watch and exploitation;*
- *Personnel capability development; and*
- *Influencing the Centre’s and Agency’s decisions and strategy.*

The following TS Vision Statement was also developed as part of this process:

“To impact Defence and Security and enable the DRDC S&T program as technical leaders and integral partners.”

In order to facilitate the realization of these integrated capabilities and vision, a notional roadmap was developed, based on the themes of:

- *Upholding the Technical Profession;*
- *Developing the Technical Professional;*
- *Fostering a culture of collaboration and networks; and*
- *Expanding the Technical Professional's influence.*

Significance: The TS integrated capabilities and Vision Statement represent a significant step towards impacting DRDC'S mission through the leveraging of expertise within the Technical Profession. By developing an accompanying notional road map, the TS has demonstrated its commitment to Professionalism and achieving impact towards the Centre's Vision.

Future plans: While the notional road map needs to be validated and approved by all Technical Professionals and senior managers, it provides a structured and actionable way forward. Short term goals include: a reinvigoration of the Technical Council, establishment of a TS mentorship program and the development of an on-line collaborative tool. Longer term goals include the development of a TS Professional development program, formalizing networks, identifying new roles and opportunities and impacting the organization at all levels.

Sommaire

Vision et capacités intégrées du réseau technique de RDDC Toronto :

**Sgt Rick Auger; Ltv Troy Beechinor; Hamid Boland; Brenda Fraser; Allan Keefe; Nada Pavlovic; Doug Saunders; Phil Terhaar; RDDC Toronto
DT 2011-017; R & D pour la défense Canada – Toronto; Septembre 2011.**

Introduction ou contexte : Grâce à la mise en œuvre du Programme d'harmonisation organisationnelle (PHO) et de la Philosophie du partenariat professionnel (PPP) de Recherche et développement pour la défense Canada – Toronto, les professionnels techniques (PT) ont une occasion sans précédent de perfectionnement professionnel et de prendre en charge des activités de direction nouvelles et novatrices. Bien que le partenariat professionnel et le cadre de travail connexe offrent une définition claire et contextuelle de l'identité, des rôles et de l'expertise du réseau technique (RT), ils ne donnent pas l'impulsion stratégique nécessaire pour orienter le RT vers la réalisation d'un impact sur l'organisation. À cette fin, le directeur général de RDDC Toronto, M. Ross Pigeau, a demandé au RT de préciser ses capacités intégrées et son impact sur la réalisation de la mission de RDDC Toronto. Un deuxième objectif consistait à élaborer un énoncé de la vision du RT qui pourrait être intégré à la Charte du Conseil technique. Les résultats devaient être présentés à la séance d'information 2010 destinée à tout le personnel, puis à la réunion du Comité de gestion.

- **Résultats :** Une équipe de projet, composée de huit membres du RT, représentant les militaires et les civils de toutes les sections ainsi qu'une vaste gamme de groupes professionnels et d'expériences, a été constituée pour mener cette initiative à terme. En consultation avec tous les membres du RT lors d'une séance de discussion ouverte et à l'aide d'un plan de communication détaillé, l'ensemble de capacités intégrées théoriques a été ramené à huit capacités intégrées constituées de quatre capacités existantes :
 - *Expertise multidisciplinaire dans des domaines techniques et humains;*
 - *Expertise à l'égard de l'infrastructure ainsi que des outils scientifiques et technologiques;*
 - *Mise à profit des capacités grâce aux réseaux et à l'auto-organisation;*
 - *Capacités axées sur les projets.*
- De plus, quatre nouvelles capacités ont été identifiées :
 - *Intégration ou partenariat militaire/civil;*
 - *Surveillance et exploitation de la technologie;*
 - *Développement des capacités du personnel;*
 - *Influence sur les décisions et la stratégie du Centre et de l'Agence.*
- L'énoncé suivant de la vision du RT a également été élaboré dans le cadre du processus :

« Influencer sur le programme de défense et de sécurité et faire en sorte que le programme de S & T de RDDC favorise des dirigeants techniques et des partenaires solidaires ».

- Afin de faciliter la réalisation de cette vision et des capacités intégrées, une feuille de route théorique a été élaborée, fondée sur les thèmes suivants :
 - *Maintien de la profession technique;*
 - *Perfectionnement de la profession technique;*
 - *Adoption d'une culture de collaboration et de réseautage;*
 - *Élargissement de l'influence de la profession technique.*

Importance : L'énoncé de la vision et les capacités intégrées du RT représentent une étape importante de l'influence sur la mission de RDDC grâce à l'expertise de la profession technique. En élaborant une feuille de route théorique d'accompagnement, le RT a montré son engagement à l'égard du professionnalisme et a influencé la vision du Centre.

Perspectives : Bien que la feuille de route doive être validée et approuvée par l'ensemble des professionnels techniques et des gestionnaires principaux, elle présente une voie à suivre structurée et utile. Parmi les objectifs à court terme, notons la remise sur pied du Conseil technique, la mise en place d'un programme de mentorat du RT et l'élaboration d'un outil de collaboration en ligne. Les objectifs à long terme comprennent l'élaboration d'un programme de perfectionnement professionnel lié au RT, l'officialisation des réseaux, l'identification de nouveaux rôles et de nouvelles possibilités ainsi que la capacité d'influencer l'organisation à tous les niveaux. This page intentionally left blank.

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The members of the Technical Stream (TS) Integrated Capabilities and Impact team greatly acknowledge DRDC Toronto Director General, Dr. Ross Pigeau for his vision and dedication towards the realization of the Professional Partnership Philosophy and belief in the capabilities of the TS. The team is also grateful for the support and contributions from the members of the TS who provide feedback and advice towards the integrated capabilities and Vision Statement provided in this document.

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1 Introduction

1.1 Technical Stream and the Organizational Alignment Program

With the implementation of Defence Research & Development Canada (DRDC) – Toronto's Organizational Alignment Program (OAP) and Professional Partnership Philosophy (PPP) (McCann et al., 2010), a workplace structure and culture has been created that emphasizes the roles and responsibilities of each professional stream and fosters a climate of integration and collaboration to contribute towards achieving the DRDC Vision.

Of the four professional streams – Corporate, Management, Scientific and Technical – arguably the greatest impact has been on the Technical Professional. Traditionally, technologists were afforded little opportunity for career progression or development of leadership competencies. This was particularly evident within the Engineering and Scientific Support Group (EG) where classification levels were relatively flat and no leadership positions existed. In addition, Technical Professionals were structurally and functionally isolated as they were assigned to support only one to two Defence Scientists, leading to limited exposure to broader technical, scientific and organizational issues. This culture also led to barriers in communication and collaboration between technologists and others, as well as variable management of performance and limited developmental opportunities. Organizationally, DRDC Toronto was impacted, as the diverse and highly skilled expertise that existed within the Technical Stream (TS) could not be effectively leveraged.

This organizational deficiency was recognized by Senior Managers early in the OAP process and a Technical Working Group was formed to provide advice towards solutions that addressed the three following principles¹:

- *Fostering an environment whereby the Technical Worker (TW) works as part of a team of professionals to support the DRDC Science & Technology (S&T) Vision;*
- *Facilitating the personal development, expertise and competencies of the TW through participation in a wider range of roles; and*
- *Remaining at the fore of advancing and emerging methods and technologies.*

Several organizational concepts were put forth, each emphasizing the fact that DRDC Toronto Technologists are a body of highly diverse and skilled technical experts that can make substantial contributions towards achieving the DRDC S&T Vision. Based on these considerations, the concept of Section Technical Groups led by a Technical Group Leader was devised and implemented. Within the S&T Sections, a progressive structuring of EG levels was developed to permit a clear development path from entry to leadership. A similar progression exists within the

¹ Advancing the Vision: A New Approach to Providing Excellence in Scientific Support. Presented to DRDC Toronto Managers Retreat (March, 2005).

Human Effectiveness Exploitation Centre (HEEC) for those in the Engineering (ENG) and Computer Services (CS) classifications. This restructuring has led to a significant increase in DRDC Toronto's technical capability, as technologists can now demonstrate unprecedented levels of leadership, collaboration and initiative in order to set increasingly higher standards of achievement and excellence.

Critical to the success of the OAP is the successful implementation of a PPP. This recognizes that the DRDC mission would best be achieved through a culture of collaboration, mutual respect and recognition of the value that each partner brings to the organization. Each partner's unique identity, role and expertise are captured in framework documents that provide guidance and clarity to members of each profession, as well as providing a transparency to other professional partners. This transparency is critical, as the framework documents also specify the relational and information requirements that are required between partners in order to permit optimal function and integration.

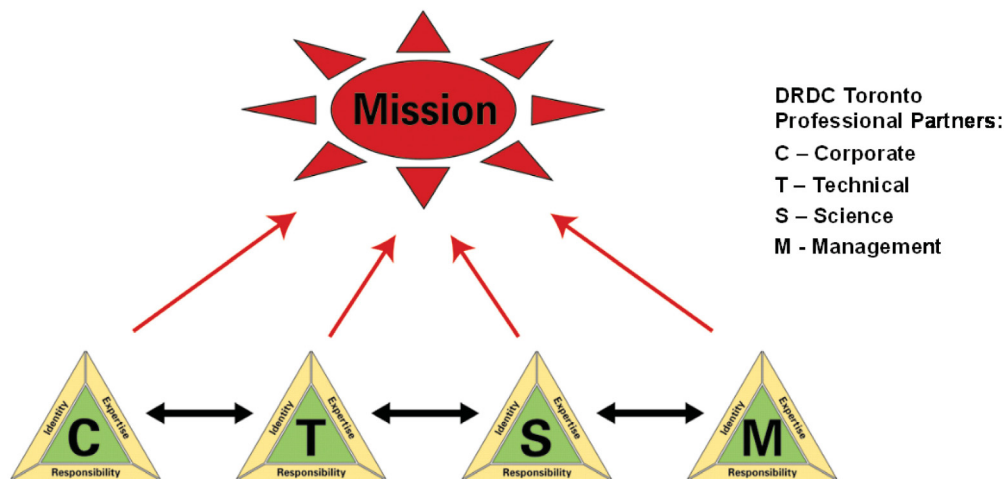


Figure 1. Professional Partners within DRDC Toronto work in partnership towards achieving the mission

1.2 Identifying the Technical Stream's Integration and Impact

In order to provide a foundation for future success and in keeping with Defence S&T Strategy², the TS was presented with a challenge by DRDC Toronto's Director General (DG), Dr. Ross Pigeau, to build upon the PPP framework documents and “identify the Technical Stream's unique,

² Defence S&T Strategy: Science and Technology for a Secure Canada (2006)

integrated capabilities and the impact these contributions have towards achieving the DRDC Toronto mission”³. Within this statement, the three words: *unique*, *integrated* and *impact* challenge the TS to think as a team of multidisciplinary technical experts, and to identify their capabilities that can be leveraged to make a demonstrable effect on DRDC's mission “to ensure that Canadian Defence and National Security capabilities exploit the full potential of Human Effectiveness S&T”.

A secondary objective of this initiative was to identify a Technical Stream Vision Statement that would be incorporated into the Technical Council Charter to provide clarity and guidance to future council initiatives and activities.

This report provides a comprehensive and transparent documentation of the process, rationale and outcomes of the Technical Stream Integrated Capabilities Working Group. The achievements of this Working Group could not have succeeded without extensive consultation and feedback from other Technical Professionals. All Technical and other Professional Partners are encouraged to espouse and promote the TS integrated capabilities, and to be inspired to contribute to the development of new, evolving integrated capabilities and opportunities for professional and personal growth that will impact the organization in exciting and innovative ways.

³ DRDC Toronto is Canada's centre of excellence for human effectiveness science and technology in the defence and national security environment. Using a systems-based approach, the centre covers all aspects of human performance and effectiveness, including individual and team performance, human-machine interaction and the influence of culture on operational effectiveness. DRDC Toronto also supports the operational needs of the Canadian Forces (CF) through research, advice, test and evaluation, and training in the undersea and aerospace environments.

2 Methods

2.1 Group composition

The formation of the TS Working Group began in January 2010 with the goal of representing TS members from all Sections and occupational groups as well as those with organizational experience. As military members are also considered to be part of the TS, at minimum it was determined that at least one member of the Working Group would come from the Canadian Forces Environmental Medicine Establishment (CFEME) community. As indicated in *Table 1*, the Group consisted of eight, including two military, members representing all S&T Sections (Collaborative Performance and Learning (CPL), Individual Readiness (IR), Human Systems Integration (HSI), and Adversarial Intent (AI)), HEEC and Joint Operational Human Sciences Centre (JOHSC).

Table 1. Project team members, affiliation and DRDC experience.

| Name | Occupational Group | Section | DRDC Experience (yrs) |
|----------------------|--------------------|---------|-----------------------|
| Sgt. Rick Auger | Military | JOHSC | 1.5 |
| Lt(N) Troy Beechinor | Military | JOHSC | 1 |
| Hamid Boland | ENG | HEEC | 0.5 |
| Brenda Fraser | EG | CPL | 1.5 |
| Allan Keefe | EG | HSI | 23 |
| Nada Pavlovic | EG | HSI | 10 |
| Doug Saunders | EG | IR | 21 |
| Phil Terhaar | EG | AI | 7 |

2.2 Procedure

An initial team meeting was held with DRDC Toronto DG, Dr. Ross Pigeau, to clarify the objectives, time-lines and project deliverables. During this meeting, the DG revealed that the intent of this initiative was to define what it means to be a Technical Professional and identify the TS's unique, integrated capabilities and the impact they have towards achieving the DRDC Toronto mission. This would then be compiled into a brief presentation (5 slides) to be presented at the All Staff Briefings and the Management Committee (MC) Meeting in May, 2010.

After considerable discussion within the project team, a project “way ahead” was proposed to the DG. After his input and approval, the project outcomes were finalized and defined as follows:

- *The development of a shared TS Vision that builds on the Technical Professional Framework by identifying its current and future integrated capabilities that have organizational impact; and*
- *The development of a notional roadmap that outlines mechanisms for facilitating the integration of the Technical Stream's capabilities, and achieving impact through exploitation of these capabilities through leveraging strategic initiatives such as Key Activities 1 (Professional Development Program) and 3 (Project Management Culture), and the Technical Council.*

Once the key project parameters of scope, objectives, participants and stakeholders had been identified, a Project Charter document (**Annex A**) was drafted to formalize the project and serve as a guiding document.

Project planning, execution and monitoring were achieved through the development of an organized work plan, laying out all major tasks, responsibilities and corresponding deadlines (**Annex B**). Integral to this plan was a comprehensive communication strategy to ensure that all stakeholders were aware of the project's progress and allow for their input and validation throughout the project phases.

As ownership of the TS integrated capabilities and Vision Statement is held by all Technical Professionals, the project team took the approach of developing a preliminary list of candidate integrated capabilities. This list was derived through facilitated, brainstorming sessions in which all project team members were encouraged to contribute in an open, forward-looking manner. These sessions encouraged all participants to consider the many capabilities that the TS currently possesses, how they impact DRDC Toronto's mission and how greater and more diverse impact could be achieved in the future. In keeping with the Agency's Value+ Proposition concept⁴, each integrated capability was evaluated against one of the four value propositions: Trusted Advisor, Open Innovator, Risk Mitigator and Knowledge Integrator.

In contrast to the identification of the integrated capabilities, the proposed TS Vision Statements were drafted individually to encourage creativity and maximize the potential for independent and critical thought. All vision statements were then reviewed by the project team, which then distilled the best features into a subset of three notional vision statements.

Communication of the project, proposed integrated capabilities and vision statements were achieved through a well-attended TS "town-hall" meeting. The project presentation was well received, and the feedback provided in the following open discussion was engaging and productive. The town-hall slides were also posted on Corpranet for the benefit of TS members who were unable to attend, as well as other Professional Partners.

Based on the comments and feedback received, the finalized TS integrated capabilities and vision statement were presented to the 2010 All Staff Briefing and the Management Committee meetings, where they received managerial endorsement.

⁴ A Bridge from our Past to our Future. A letter from ADM(S&T) (March, 2010)

3 Results

3.1 Integrated Capabilities

The results of the TS “town-hall” meeting yielded a comprehensive list of eight integrated capabilities that represent significant impact to the organization and its mission. Four of these were assessed to represent mature integrated capabilities that were actively being demonstrated by the Technical Professionals on a regular basis and were defined as “Current” capabilities. In keeping with the TS’s ambition to reach its full potential, and a genuine desire to enhance its contribution to the success of DRDC Toronto, four additional “Emerging” integrated capabilities were identified. These emerging integrated capabilities represent the TS’s move to embrace the concept of the Technical Profession, taking an active role in assessing and forecasting personnel and organizational requirements, and taking progressive action to fill these gaps.

The eight integrated capabilities are summarized below. A complete listing of the integrated capabilities with rationale and Value+ Proposition assessment is provided in **Annex C**.

3.1.1 Current Integrated Capabilities

- *Multidisciplinary expertise across human and technical domains;*
- *Expertise in S&T tools and infrastructure;*
- *Leveraging capability through networks and self-organization; and*
- *Project oriented capabilities.*

3.1.2 Emerging Integrated Capabilities

- *Military/Civilian integration or partnership;*
- *Technology watch and exploitation;*
- *Personnel capability development; and*
- *Influencing the Centre’s and Agency’s decisions and strategy.*

3.2 Technical Stream Vision Statement

The development of a TS Vision Statement was challenging in that it needed to be comprehensive and relevant to all individuals and occupational groups within the Stream. Several factors were taken into consideration in the process. First, it was imperative that the vision be aligned with the Centre’s Vision and that the TS’s unique roles and impact on DRDC Toronto’s mission be clearly identified. Second, the multidisciplinary nature of the TS was to be emphasized, keeping in mind the distinction among TS members who work with engineering technology (i.e., design, develop, and prototype) and those who conduct research (i.e., experimental design, statistical analysis, literature reviews, prepare ethics protocols). Third, the importance of the culture of collaboration

and the TS's contribution to the mission through partnership with other streams was to be stressed. Finally, the proposed Vision Statement was to be concise, giving a clear and inspiring direction forward. The resultant Vision Statement derived from these considerations and numerous proposals evolved into the following:

“To impact Defence and Security and enable the DRDC S&T program as technical leaders and integral partners.”

3.3 Achieving the Vision – the Technical Stream Way Forward

While the definition of the TS integrated capabilities and Vision Statement builds upon the TS Professional Partnership Framework, the full path towards organizational impact begins with its foundation as Federal Public Servants with Department of National Defence (DND) and DRDC (Figure 2). Each of these steps leads towards achieving impact; however, this success can only be accomplished through the realization of the values and principles that they promote. From the perspective of the TS integrated capabilities and vision, this is best achieved through a comprehensive and progressive approach towards the development of the Technical Profession. To assist in this process, a notional road-map has been developed to provide us with a strategy for moving forward.

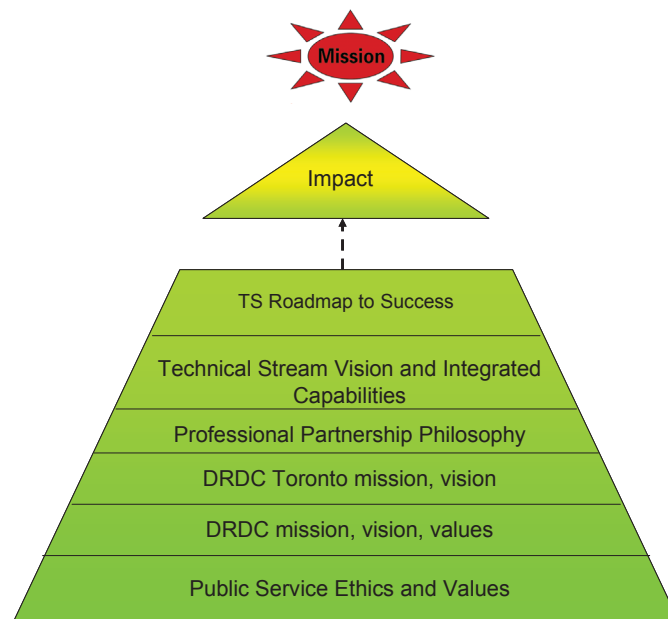


Figure 2. The TS vision and integrated capabilities are part of the foundation that builds towards achieving organizational impact

Reviewing the TS integrated capabilities and Vision Statement reveals four key themes that are critical to future success:

- *Upholding the Technical Profession;*
- *Developing the individual;*
- *Fostering a culture of collaboration and networks; and*
- *Expanding the Technical Professional's influence.*

These themes provide guidance towards developing a system to evaluate the status of the Technical Profession and the identification of performance objectives and organizational actions that need to be achieved in order to realize its full potential. Each of the themes and recommended objectives and actions are provided in the following Section.

3.4 Roadmap Guiding Themes

3.4.1 Theme 1: Upholding the Technical Profession

Objective: TS self-governance.

Action: Establish a viable and active Technical Council that promotes the TS Professional Partnership framework and vision and serves as a representative body to initiate, co-ordinate and implement TS initiatives.

3.4.2 Theme 2: Develop the Technical Professional

Objective: Career-long development of the Technical Professional.

Action: Develop and institutionalize a formal TS Professional Development program as recommended by Key Activity 1(Professional Development Program)⁵.

Action: Develop a formal TS mentoring program.

3.4.3 Theme 3: Foster a culture of collaboration and networks

Objective: Enhance the TS's integration and interaction with partners and clients.

Action: Develop a TS collaborative tool/community that may include:

- *A skills and expertise database;*

⁵ Partnership through Professionalism: An Organizational Journey (2010)

- *A common inventory of facilities, equipment, tools and methods; and*
- *User guides, best practices and standards documentation.*

Action: Develop closer partnerships and collaboration with military through activities such as: social interaction, mentoring, collaboration or operational experiences.

3.4.4 Theme 4: Expanding the Technical Professional's influence

Objective: Achieve greater influence within and external to DRDC

Action: Perform a key role in establishing a project management culture within DRDC Toronto by leveraging the outcomes of Key Activity 3 (Project Management Culture).

Action: Achieve greater impact within, and external, to DRDC by identifying and assuming new roles and responsibilities (e.g. organizational roles, committees, assignments, and participation on technical panels and working groups)

Action: Assume an increasing role in leading Support to Operations/Development, Engineering and Evaluation (STO/DEE) projects.

3.5 TS Roadmap to Success

The development of a strategic roadmap is a complex process that is beyond the scope of this project, requiring a dedicated effort to create a detailed and comprehensive plan. There is sufficient information at this stage, however, to provide a notional assessment of near-, mid- and long-term objectives. While most of these activities have been ongoing or are under constant consideration, the following phases represent recommended objectives for achieving tangible actions or results.

3.5.1 Phase 1 (0 – 2 years)

Achieve

- *Active Technical Council;*
- *Plan and design a TS Collaborative Tool prototype;*
- *Establish informal TS mentorship program; and*
- *Develop formal TS development roadmap.*

Initiate

- *TS Professional Development Program initiative;*
- *Military/civilian collaboration activities; and*
- *Identify new collaborative networks.*

3.5.2 Phase 2 (1 – 3 years)

Achieve

- *Institutionalize the TS Collaborative Tool;*
- *Institutionalize the TS Professional Development Program;*
- *Establish formal military/civilian partnering opportunities; and*
- *Establish Project Management culture and principles.*

Initiate

- *Pursue a greater role in STO/DEE activities; and*
- *Identification of opportunities to achieve broader organizational impact.*

3.5.3 Phase 3 (3+ years)

Achieve

- *Full contribution and impact at all organizational levels.*

3.6 Technical Stream Collaborative Tool Project

The Collaborative Knowledge and Management Project (CKMP) is a HEEC initiative to develop an on-line collaborative tool using Web 2.0/3.0 free and open source software (FOSS), when possible. Examples of such tools may include: Wikis, media sharing, search applications, data mining, instant messaging and semantic analysis. As **Phase 1** of the notional road-map indicates the planning and creation of a TS Collaborative Tool prototype, it is proposed that the TS leverage the CKMP initiative to this end. Such a tool would provide DRDC with a TS resource that not only facilitates collaboration creation of new technical knowledge, but provides a repository for shared inventories, material and human resource management, best practices documentation and a knowledge and skills database. A Work Package Approval Process (WPAP) form for the TS Collaborative Tool has been submitted for management consideration and approval.

4 Conclusions

The TS is a diverse and valuable partner that has significant organizational potential. The high level of dedication, co-operation and creativity shown by all Technical Professionals in indentifying the current and emerging TS integrated capabilities and Vision Statement demonstrate their motivation and ability to act as a cohesive profession towards achieving greater organizational impact at all levels. While the DRDC Toronto Technical Stream is still in its formative stage, its potential is unparalleled within DRDC. Through the support and implementation of a comprehensive developmental roadmap that is focused on both the individual and the Profession, the TS is poised to achieve excellence in contributing towards achieving the DRDC mission.

References

McCann, C., Allin, L., Hendricks, T., Wojcinski, H., Pigeau, R. (2010) Partnership through professionalism: An Organizational Journey. DRDC Toronto. Unpublished manuscript.

Annex A Project Charter

| | |
|---|--|
| Project Name: | Technical Stream – Integrated Capability and Impact |
| Executive Sponsor: | Director General: Dr. Ross Pigeau |
| Activity Lead (Project Manager): | Allan Keefe |
| Military Representative: | Lt (N) Troy Beechinor, Sgt Rick Auger |
| Technical (Civilian) Representative: | Brenda Fraser, Hamid Boland, Allan Keefe, Nada Pavlovic, Doug Saunders, Phil Terhaar |
| Planned Start: Jan 2010 | Planned Finish: May 2010 |
| Project Objective: | To identify both the Technical Stream's unique integrated capabilities and the impact these contributions have towards achieving the DRDC Toronto mission. |
| Project Outcomes: | <ul style="list-style-type: none"> ○ The development of a shared Technical Stream vision that builds on the Technical Professional Framework by identifying their current and future integrated capabilities that have organizational impact. ○ Develop a notional roadmap that outlines mechanisms for facilitating the integration of the Technical Stream's capabilities, and achieving impact through exploitation of these capabilities through leveraging strategic initiatives such as Key Activities 1 and 3, and the Technical Council. |
| Major Deliverables: | <ul style="list-style-type: none"> ○ Identification of the Technical Stream's current and potential integrated capabilities ○ Development of Technical Stream integrated capability and impact vision that is instituted within the Technical Council Charter ○ Development of a notional roadmap, outlining a Technical Stream integrated capability sustainment and development strategy. ○ Presentation of project's recommendations to management committee |
| Executive Sponsor Responsibilities: | <ul style="list-style-type: none"> ○ Provide support and guidance to the working group. ○ Be actively involved as needed to facilitate the process ○ Communicate progress and accomplishments through appropriate channels |
| Activity Lead Responsibilities: | <ul style="list-style-type: none"> ○ Assume a Project Management role for managing the project plan, keeping project on task and on schedule ○ Schedule and facilitate regular working group meetings ○ Develop a Communications Plan for informing management and engaging other stakeholders throughout the process |
| Working Group Member Responsibilities: | <ul style="list-style-type: none"> ○ Contribute to the effort by bringing unique experience to decision making process ○ Be proactive in sharing ideas, respect the ideas of others and work towards consensus building ○ Represent the interests of all Technical Professionals |

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| <ul style="list-style-type: none"> ○ Be prepared for and attend meetings, if available ○ Be an ambassador to the project to all stakeholders |
| <p>Significant Stakeholders:</p> <ul style="list-style-type: none"> ○ Technical Professionals ○ Director General ○ Management Committee ○ Other Professional Partners |

Annex B Project Work Plan

Project: ■ Technical Stream Integration and Impact

Date: mm/dd/yy

Project Objective: To identify both the Technical Stream's unique integrated capabilities and the impact these contributions have towards achieving the DRDC Toronto mission.

| Phase | | Objectives | Major Tasks | Project Completed By: <i>Date</i> | | | | | | | | | | | | Owner / Priority | |
|----------|---|---|--|-----------------------------------|--|--|--|--|--|--|--|--|--|--|--|------------------|--|
| Phase 1 | ✓ | | 1 Review TORIX concept and PP framework | | | | | | | | | | | | | | |
| | | 2 Build on previous brainstorming on current and future integrated capabilities | | | | | | | | | | | | | | | |
| | | 3 Identify how those capabilities impact our mission | | | | | | | | | | | | | | | |
| | | 4 Categorize capabilities in terms of what they support | | | | | | | | | | | | | | | |
| | | 5 Ensure that integration with military is addressed | | | | | | | | | | | | | | | |
| | | 6 Prioritize the capabilities list | | | | | | | | | | | | | | | |
| | | 7 Present to Technical Council for input | | | | | | | | | | | | | | | |
| | | 8 Validate with the DG | | | | | | | | | | | | | | | |
| Phase 2 | ✓ | | 1 Integrate the results from Phase 1 into a vision statement | | | | | | | | | | | | | | |
| | | 2 Ensure that the vision statement is included in Technical Council charter | | | | | | | | | | | | | | | |
| | | 3 Communicate/feedback | | | | | | | | | | | | | | | |
| | | 4 Revise/fine tune the vision statement | | | | | | | | | | | | | | | |
| | | 5 Validate with the DG | | | | | | | | | | | | | | | |
| Phase 3 | ✓ | | 1 Propose Implementation plans for near, mid and long term | | | | | | | | | | | | | | |
| | | 2 Establish the sustainment strategy | | | | | | | | | | | | | | | |
| | | 3 Identify and create linkages/exploit outcomes from Key Activities, Technical Council or other initiatives | | | | | | | | | | | | | | | |
| | | 4 Report progress to Technical Council and DG | | | | | | | | | | | | | | | |
| | | 5 Include TS contribution to Section Business Plan/Strategy | | | | | | | | | | | | | | | |
| Phase 4 | ✓ | | 1 Prepare slides for the MC meeting | | | | | | | | | | | | | | |
| | | 2 Obtain DGs approval | | | | | | | | | | | | | | | |
| | | 3 Present project recommendations to MC | | | | | | | | | | | | | | | |
| | | 4 Revise if necessary | | | | | | | | | | | | | | | |
| | | 5 Present recommendations at All-staff briefing (May 6) | | | | | | | | | | | | | | | |
| | | 6 Devise an outline for the Technical Memo | | | | | | | | | | | | | | | |
| | | 7 Complete assigned sections | | | | | | | | | | | | | | | |
| | | 8 Publication process | | | | | | | | | | | | | | | |
| Phase 5 | ✓ | | 1 Complete WPAP | | | | | | | | | | | | | | |
| | | 2 Present WPAP for Management Approval | | | | | | | | | | | | | | | |
| | | 3 Hand off project to next committee for implementation | | | | | | | | | | | | | | | |
| Phase 6 | ✓ | A | | | | | | | | | | | | | | | |
| | | B | | | | | | | | | | | | | | | |
| Phase 7 | ✓ | C | | | | | | | | | | | | | | | |
| | | D | | | | | | | | | | | | | | | |
| Phase 8 | ✓ | E | | | | | | | | | | | | | | | |
| | | F | | | | | | | | | | | | | | | |
| Phase 9 | ✓ | G | | | | | | | | | | | | | | | |
| | | H | | | | | | | | | | | | | | | |
| Phase 10 | ✓ | I | | | | | | | | | | | | | | | |
| | | J | | | | | | | | | | | | | | | |
| Phase 11 | ✓ | K | | | | | | | | | | | | | | | |
| | | L | | | | | | | | | | | | | | | |
| Phase 12 | ✓ | M | | | | | | | | | | | | | | | |
| | | N | | | | | | | | | | | | | | | |
| Phase 13 | ✓ | O | | | | | | | | | | | | | | | |
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| ID current and future TS integrated capabilities | Development of TS integrated vision statement | Development of a notional roadmap document | Communicate results | 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Annex C Technical Stream Integrated Capabilities

C.1 Current Capabilities

Multidisciplinary expertise across human and technical domains

Value+ Proposition: Knowledge Integrator, Trusted Advisor

A coherent and comprehensive systems-based approach provides a rich set of well rounded solutions toward integrated human performance and effectiveness S&T. As trusted advisors, the Technical Stream (TS) offers expert wide-ranging technical advice, capabilities and skills to the S&T community and other partners.

Expertise in S&T tools and infrastructure

Value+ Proposition: Open Innovator, Risk Mitigator, Trusted Advisor

The TS provides tools, methods and infrastructure that enable the conduct of the Agency's S&T program. Their expertise translates into the ability to adapt existing, innovate new, and leverage emerging technology, where appropriate. By implementing sound and current research methodologies, the TS maintain the reliability and high quality of S&T programs. A forward-thinking approach to facility and equipment design ensures that expert advice is provided to DRDC Toronto for infrastructure and tools modernization.

Leveraging capability through networks and self-organization

Value+ Proposition: Knowledge Integrator, Open Innovator

The TS shares and integrates knowledge across multiple disciplines through establishing and exploiting collaborative networks across and beyond the Agency. Through these networks, they are able to tap into the distributed and diverse expertise that enables them to generate innovative solutions and provide advice on unique and diverse topics. They build and maintain a culture of communication and cooperation that in turn helps identify and create new capabilities and proactively identify knowledge gaps. Through forming ad-hoc, multidisciplinary, cross-sectional teams, they are able to respond with agility to meet diverse challenges and achieve comprehensive and cost-effective solutions.

Project oriented capabilities

Value+ Proposition: Risk Mitigator

The TS provides expert advice and leadership throughout the life-cycle of DRDC Toronto projects. Risk mitigation is achieved through careful planning, standardized practices, and good communication. The end product is the timely delivery of valued, relevant, and credible results for all DND stakeholders.

C.2 Emerging Integrated Capabilities

Military/Civilian Integration or Partnership

Value+ Proposition: Knowledge Integrator, Trusted Advisor

Collaboration between military and civilian technical professionals facilitates the linkages between Science & Technology and operations. This symbiotic relationship allows the civilian technical professionals to better understand the operational and environmental challenges. In turn, they are able to provide Research, Technology & Analysis (RTA) advice and expertise to the military members. Through understanding each others' needs and assisting each other in conducting both RTA and STO/DEE activities they are collectively better prepared and enabled to provide valid and applicable S&T solutions that impact current and future CF operations.

Technology watch and exploitation

Value+ Proposition: Integral Advisor, Open Innovator, Risk Mitigator, Knowledge Integrator

Acts as a liaison between the Science Stream and end users by enabling knowledge generation, transformation and application. Enable opportunities to explicate the human effectiveness S&T programs through external partnerships and investing from the following sectors: security partners; other government departments; academic organizations; industrial and commercial entities; and other science-based Research & Development (R&D) organizations. Promote the visibility and exploitation of integrated human effectiveness Science & Technology through experimentation, development oversight, installation, demonstration, and training. Identify and adapt technologies to meet client and partners needs.

Personnel capability development

Value+ Proposition: Integral advisor, risk mitigator

A structured professional development strategy that is based on the current and future needs will develop TS personnel through assignments within the Technical Group structure and to other DRDC and external positions, partnerships with other professionals, and competency and knowledge based training. This approach will promote motivation and retention of employees, encourage high productivity and continuous growth, ensure continuity through succession planning, and facilitate rapid development of new employees resulting in a responsive and adaptive Technical Professional workforce.

Influencing the Centre's and Agency's strategic decisions.

Value+ Proposition: Integral Advisor

Through active representation on all DRDC committees and strategic initiatives, the unique knowledge, experience and perspective of the TS provides an essential contribution to DRDC's strategic decision making process. This influence can extend to intra/inter-government departments, government-industry, or international partners through the representation of DRDC on external panels and forums.

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List of symbols/abbreviations/acronyms/initialisms

| | |
|---------|---|
| AI | Adversarial Intent |
| CF | Canadian Forces |
| CS | Computer Services |
| CFEME | Canadian Forces Environmental Medicine Establishment |
| CKMP | Collaborative Knowledge Management Platform |
| CPL | Collaborative Performance and Learning |
| DG | Director General |
| DND | Department of National Defence |
| DRDC | Defence Research & Development Canada |
| EG | Engineering and Scientific Support Group |
| ENG | Engineering |
| FOSS | Free and Open Source Software |
| HEEC | Human Effectiveness Experimentation Centre |
| HSI | Human Systems Integration |
| IR | Individual Readiness |
| JOHSC | Joint Operations Human Sciences Complex |
| MC | Management Committee |
| OAP | Organizational Alignment Program |
| PPP | Professional Partnership Philosophy |
| R&D | Research & Development |
| RTA | Research, Technology & Analysis |
| S&T | Science & Technology |
| STO/DEE | Support to Operations / Development, Engineering and Evaluation |
| TP | Technical Professional |
| TS | Technical Stream |
| TW | Technical Worker |
| WPAP | Work Package Approval Process |

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(U) With the success of DRDC Toronto's Organizational Alignment Program and Professional Partnership Philosophy, the Technical Stream (TS) was presented with the challenge of providing a foundation for its success through the identification of their unique, integrated capabilities and the impact that they have towards achieving organizational impact. A secondary objective was to develop a TS vision statement that would be instituted within the Technical Council Charter. A project team of eight TS members, representing military and civilians from all sections, and a wide range of occupational groups and experience, developed a notional set of integrated capabilities and vision statements. These were presented to all Technical Professionals through a Town Hall meeting and published on Corporanet for review. Based on the feedback received, four current and four developing integrated capabilities and the Technical Stream vision statement were identified, and presented at the 2010 All Staff Briefing and subsequent Management Committee meeting. Based on positive reception and acceptance, a multi-phase notional roadmap was proposed to provide a strategy for future TS development. This roadmap is based on the themes of: a) upholding the Technical Profession, b) developing the Technical Professional, c) fostering a culture of collaboration and networks and 4) expanding the Technical Professional's influence. Through the identification of the TS integrated capabilities and vision statement, and way forward provided by the notional roadmap, the TS is poised to achieve greater excellence and impact towards the DRDC Toronto Mission

(U) Comme suite au succès du Programme d'harmonisation organisationnelle et de la Philosophie du partenariat professionnel de Recherche et développement pour la défense Canada – Toronto, le Réseau technique (RT) a reçu le mandat d'expliquer le fondement de sa réussite en précisant ses capacités uniques et intégrées de même que son impact sur la réalisation de la mission de l'organisation. Un deuxième objectif consistait à élaborer un énoncé de la vision du RT qui pourrait être intégré à la Charte du Conseil technique. Une équipe de projet, composée de huit membres du RT, représentant les militaires et les civils de toutes les sections ainsi qu'une vaste gamme de groupes professionnels et d'expériences, a élaboré un ensemble théorique de capacités intégrées et d'énoncés de la vision, lequel a été présenté à tous les professionnels techniques dans le cadre d'une séance de discussion ouverte et publié sur Corpranet à des fins d'examen. Grâce aux commentaires reçus, on a pu identifier quatre capacités existantes et quatre capacités intégrées en développement ainsi que l'énoncé de la vision du RT, et les présenter à la séance d'information 2010 destinée à tout le personnel, puis à la réunion du Comité de gestion. Reposant sur une approbation et un accueil positifs, une feuille de route théorique à étapes multiples a été proposée en fonction d'une stratégie destinée à d'éventuels développements du RT. Cette feuille de route repose sur les thèmes suivants : a) maintien de la profession technique, b) perfectionnement de la profession technique, c) adoption d'une culture de collaboration et de réseautage, d) élargissement de l'influence de la profession technique. Grâce à l'identification de l'énoncé de la vision et des capacités intégrées du RT ainsi qu'à la voie à suivre de la feuille de route théorique, le RT est voué à l'excellence tout en ayant un impact hautement positif sur la mission de RDDC Toronto.

14. **KEYWORDS, DESCRIPTORS or IDENTIFIERS** (Technically meaningful terms or short phrases that characterize a document and could be helpful in cataloguing the document. They should be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location may also be included. If possible keywords should be selected from a published thesaurus, e.g. Thesaurus of Engineering and Scientific Terms (TEST) and that thesaurus identified. If it is not possible to select indexing terms which are Unclassified, the classification of each should be indicated as with the title.)

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Technical Stream, Organizational Alignment Program, Professional Partnership
Philosophy, integrated capabilities, vision statement, roadmap

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